ago." That alteration was made by Sir Thomas Hanmer, and has been rejected by every subsequent editor, and rightly so. "Green" was a common epithet for the eyes, and examples occur in many of our early poets, from Chaucer to Milton. Dyce quotes from H. Weber (*à propos* of Cervantes), "Green eyes were considered as peculiarly beautiful." We have of Neptune, "Thy rare green eye," in "The Two Noble Kinsmen," v. 1, in a passage attributed by some to Shakespeare. That Shakespeare wrote *green* in "Romeo and Juliet" I think beyond reasonable doubt; and if he wrote *green* he certainly meant *green*, and not *blue*: for in "A Midsummer Night's Dream" green eyes are compared to leeks. In our day violet eyes have the precedence over green eyes, yet I think there is still a kind of fascination in the latter. I leave the eagles to the naturalists. *Ne sutor, &c.*

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OUR ASTRONOMICAL COLUMN

A VARIABLE STAR OBSERVED BY SCHEINER IN 1612.—In the last number of the "Vierteljahrsschrift der astronomischen Gesellschaft," Prof. Winnecke examines an observation made by Scheiner, of *Rosa Ursina* notoriety, which appears to involve for its explanation the variability of a star at a past time which of late years has exhibited no fluctuation in brightness. In Scheiner's second work, "De Maculis Solaribus," published at Augsburg in 1612, are several letters addressed to his patron, Welser, one of which, dated April 14, 1612, contains observations of Jupiter and his satellites from March 29 to April 8. (It will be remembered that Scheiner regarded the solar spots as in reality solar satellites, which explains the introduction of notices of the satellites of Jupiter in a work professedly relating to sun-spots.) On March 30 he remarked, in addition to the four known satellites of the planet, a fifth star in the same field of view, not observed on the preceding night. This star diminished to invisibility on April 9. Suspecting a slight proper motion, it was regarded by Scheiner as a *fifth satellite* of Jupiter. From figures showing the position of the star with respect to the planet on March 30 and April 7, it may be inferred that they were in conjunction in longitude on the latter day, with a difference of latitude of 10′, the star to the south. Some years since Prof. Winnecke had calculated the place of Jupiter from Bouvard's table for the date of observation, with the view to identify the star which so soon disappeared, but Leverrier's tables for this planet being now available, he engaged Herr Küstner, one of the students at Strasburg, to compute the position of Jupiter for April 7, 1612, at Paris midnight: the geocentric longitude was found to be 136° 13′ 4″·3, and the latitude + 1° 6′ 52″·7 (differing about 6′ from Bouvard's place); hence the position of Scheiner's star, referred to the epoch of the "Durchmusterung"—1855·0, will be in R.A. 9h. 29m. 21·2s., Decl. + 15° 52′·1, thus identifying the object with a star of 8·5m., which the "Durchmusterung" places in R.A. 9h. 29m. 21·4s., Decl. + 15° 53′·5. There are several observations of this star; it occurs in Lalande's zone, 1796, April 4 (No. 18886 of the reduced catalogue), as 8m.; Bessel observed it twice in 1825, estimating it, on February 24, 8m., and on March 12, 7·8m., and Struve using it as a reference-star for Biela's comet on October 26 in the following year, also rated it 7·8m. Again, it was observed by Preuss with the Dorpat meridian circle, in March, 1833, and noted of the same magnitude, so that during this period its brightness appears to have been constant, and Prof. Winnecke adds that repeated comparisons made by himself during the last seventeen years have not indicated any variation. The close agreement of place identifies the star satisfactorily, and he infers that we have here an instance of a star which, though apparently constant during the present century, was variable in Scheiner's time. Prof. Winnecke remarks upon the interest that would attach to a spectroscopic examination of this object by the possessors of powerful telescopes. Its position for 1880·0 is in R.A. 9h. 30m. 44s., N.P.D. 74° 12′·7. He considers that, notwithstanding Scheiner's inexpressible prolixity, the author of the *Rosa Ursina* does not deserve the severe reproach which he has received at the hands of the astronomical historian, but that he was thoroughly candid in communicating what he had seen, and much acquaintance with his writings has strengthened this opinion.

The unusual phenomenon to which we have adverted appears to have made a strong impression upon Scheiner, who transmitted his observation on the instant to Welser,

THE ZODIACAL LIGHT.—We have already alluded in this column to the very questionable accuracy of a statement so often made in popular astronomical works, that the evening zodiacal light is best seen in these latitudes in March, near the vernal equinox, the inclination of its axis to the horizon being then greater than earlier in the year. Notwithstanding this circumstance, it appears certain that of late years the finest views, or we would say the most conspicuous exhibitions of the zodiacal light have occurred between the middle of January and the middle of February. Many instances of bright displays of the phenomenon during this interval might be mentioned. Thus, on February 6, 1856, Secchi records that the light at Rome was brighter than he ever remembered to have seen it, and of great extent; it was yellowish towards the axis, and while the more conspicuous part of the Via Lactea, in Cygnus, was invisible in a hazy sky at a low altitude, the light was traceable to the horizon; it was slightly curved towards the north, and is described as presenting on the whole "un grande spettacolo;" on this evening, it is added, the rest of the sky was illuminated in an unusual manner. Again, it was in the middle of February, 1866, that Mr. Lassell, during his last residence at Malta, witnessed a remarkable display. He says as he went up to the Observatory the striking brightness of the zodiacal light riveted his attention as never before. It was at least twice as bright as the brightest part of the Milky Way, and fully twice as bright as he ever saw it before, and Mr. Lassell upon this occasion also remarked that its character was quite different to that of the Milky Way, a difference more easily recognised than described; generally it is of a much redder hue. In 1874, in the neighbourhood of London, the most conspicuous displays took place on the evenings of January 14 and 17, and February 18, and in 1875, on January 24, 25, and 30, on the first of these evenings the zodiacal light was surprisingly conspicuous, decidedly reddish, and much excelling any part of the Milky Way. Observations on the position of the apex during these favourable views of late years fully support the conclusion of Prof. Julius Schmidt in his treatise on the phenomenon, published in 1856, that the maximum eastern elongation of the apex falls about the middle of January. Towards the end of March, on the contrary, there is a minimum, according to the Athens astronomer, as regards elongation, breadth, and the inclination of the axis of the light on the north side of the ecliptic.

BIOLOGICAL NOTES

NEW ASIATIC FISHES.—In the *Annals of Natural History* for 1873[1] was given a translation of Prof. Kessler's description of the new sturgeon, *Scaphirhynchus fedtschenkoi*, recently discovered in the Syr Daria or Jaxartes, and a note by Dr. Günther, pointing out the interest attaching to the existence in Northern Asia of a second species of this curious form, hitherto only known from the single species, *S. cataphractus*, of the Mississippi. Recently, however, a second Asiatic species of *Sca-*

[1] "On a Remarkable Fish of the Family of Sturgeons," &c. (*Ann. Nat. Hist.*, ser. 4, vol. xii. p. 263).

phirhynchus has been discovered in the Amou Daria or Oxus by Modest Bogdanoff, and named after the well-known governor of Turkestan, *S. kaufmanni*. This new fish was first described and figured in a Russian work on the Natural History of Khiva, prepared under General Kaufmann's directions some time since, but not yet published—owing, we may well suppose, to General Kaufmann's time being too much taken up with other more important matters. Figures and descriptions of it are given in Prof. Kessler's great work upon the results of the Aralo-Caspian Expedition. The fourth part of this work, published in January, 1877, contains not only full details as to this species, but also of a third Asiatic species of this genus—*S. hermanni*, Severzoff, likewise from the Oxus, without caudal filaments, which, however, is only based upon young examples. As already remarked by Dr. Günther in the note above referred to, the presence in the great Asiatic, as well as in the North American rivers, of this and another peculiar form of the limited group of sturgeons[1] is one of the highest importance in zoological geography. There can be little doubt that species of the genus *Scaphirhynchus* will also be found to occur in the great Chinese rivers, the Yang-tzé-kiang and Ho-ang-ho.

RESPIRATION OF AMIA.—*Amia calva* is a fresh-water fish of the United States. It is abundant in the Mississippi and its tributaries and in the great lakes. It attains a length of about two feet. Mr. Burt G. Wilder has published (*Proceedings* of the American Association for the Advancement of Science, 1877) an account of a series of experiments, which seem very conclusively to show that Amia not only exhales but also inhales air, and that this respiration is carried on by means of its swim (air) bladder. This is so much subdivided, that it will be remembered that Cuvier and others compared it to the lung of some reptiles. Experiments seem to show that the aerial respiration was more active when the water in which the fish lay was imperfectly aerated. The average of twenty-three measurements of the amount exhaled was thirteen cubic centimetres. The exhaled air contained about three per cent. of carbonic acid, and when the fish was fasting it contained at least one per cent. Amia displays great powers of endurance of privation of water. On one occasion a specimen was kept out of water for an hour and five minutes without any apparent discomfort or injury. During most of the time the gill-covers were tightly closed, but there were regular movements of the jaw, hyoid apparatus, and sides of the mouth.

CHILIAN BUTTERFLIES.—We have received a monograph of the butterflies of Chili, by Edwyn C. Reed, printed at the national press at Santiago de Chile. It contains descriptions of some sixty-six species, several of which are described as new, and the monograph is accompanied by three plates. We hope that we may from time to time be able to announce further new contributions to the natural history of this district, so well known by the elaborate "Historia fisica y politica" of Gay.

INSECTS IN TERTIARY ROCKS.—Mr. S. H. Scudder has recently published an account of some very remarkable forms of insects from the tertiary rocks of Colorado and Wyoming. These descriptions form Article xxiv. of the forthcoming vol. iv. of the United States Geological and Geographical Survey. Perhaps the most generally interesting insect described is a fossil butterfly (*Prodryas persephone*), which was found so perfect as to allow of the description even of the scales of the body and wings. It is the first butterfly fossil found in America, and, as only some nine species are known from the well-worked tertiary strata of Europe, it is undoubtedly of great value and interest. It shows a marked divergence from living types. A beetle is described (*Parolamia rudis*) which is rather of an Old World than of a New World type. A fly (*Palembolus florigerus*) is interesting not only as representing a highly-specialised type hitherto unknown in America, but as showing how the semblance of an original vein may be formed in a wing out of mere fragments of distinct veins. Masses of eggs of a species of Corydalites are also described as the first insect eggs found in a fossil state.

ON THE RELATIONS OF RHABDOPLEURA.—Prof. Allman believes that the very anomalous characters of this curious polyzoon genus (*Rhabdopleura*) admit of being derived from the typical confirmation of a polyzoon by certain easily understood modifications. One of the most puzzling of those characters is the apparent absence of a tentacular sheath. He maintains that the endocyst is really represented by the contractile cord which seems to take the place of the funiculus in the fresh-water polyzoa, but with which it has nothing to do. In *Rhabdopleura* the endocyst has receded from the ectocyst, and in its posterior part of the approximation of its walls, and the consequent nearly complete obliteration of its cavity has become changed into the contractile cord. Anteriorly, it spreads over the alimentary canal of the polypide, to which it becomes closely adherent, and here represents the tentacular sheath. Still more posteriorily the endocyst undergoes even greater modification, for the contractile cord becomes chitinised and converted into the firm rod which is found running through the stem and branches of the older parts of the colony, and which still presents in its narrow lumen a trace of the original cavity of the endocyst. The shield-like appendage which is attached to the lophophore is one of the most remarkable features in the genus. G. O. Sars regards it as representing the epistome of the Phylactolæmatous polyzoa, but this view is entirely opposed by the history of its development. Prof. Allman, by tracing its development in connection with that of the polypide, has arrived at the conclusion that it is formed as a primary bud from the modified endocyst, and that in its turn it gives origin to a bud of the second order, which becomes directly developed into the definite polypide. The primary or scutiform bud continues for some time to increase in size with the developing polypide which it considerably exceeds, but is at last surpassed by the latter. It never disappears, however, but ultimately remains in the condition of a subordinate appendage of the polypide to which it had given origin. We have thus in the life-history of *Rhabdopleura* an alteration of heteromorphic zooids. The first term, however, in the genetic series, the direct product of the sexual system is as yet wanting, no trace of this system having hitherto been discovered in *Rhabdopleura* (Linnean Society of December 19, 1878).

GEOGRAPHICAL NOTES

M. BRAZZA and Dr. Ballay, the two Ogowé explorers, have arrived in Paris. M. Brazza is now preparing a map showing his discoveries in West Africa. It shows that the Ogowé issues from a large chain of mountains, and is formed by a number of rivulets descending from the high regions. The explorers suppose that a large part of the water filling the bed of the Ogowé issues by subterranean infiltrations from the Congo Basin. MM. Brazza and Ballay are led to this conclusion by the belief that the Congo is to be found on the other side of the range of mountains mentioned. They were unable to make a direct verification of this assumption, on account of the hostility evinced by the native tribes, who are of the most warlike disposition. It was with the utmost difficulty that the French explorers escaped from the hands of these barbarians, whose war-cries, arms, and canoes present striking resemblances to the ferocious

[1] Of the Sturime genus *Polyodon*, or Shovel-nosed Sturgeons, one, *P. folium*, occurs in the Mississippi, and a second, *P. gladius*, in the Yang-tzé-kiang.